Amendments to Specification

Please replace page 12, first full paragraph [0056], lines 5-6, with the following paragraph:

Additional details concerning the structure and function of a suitable system for locating and tracking persons 14 and to support various other features of the present invention are disclosed in U.S. Patent 5,561,412, the disclosure of which is hereby incorporated by reference. Other location and tracking systems are disclosed in U.S. Patent 6,344,794 filed January 7, 2000, and co-pending U.S. Patent Application 09/699,796, filed October 30, 2000, **now U.S. Patent No. 6,727,818** the disclosures of which are hereby incorporated by reference. Additional location and tracking systems are disclosed in U.S. Patents 4,275,385; 4,601,064; Re 35,035; 5,633,742; 5,745,272; 5,818,617; 5,119,104; 5,387,993; 5,548,637; 5,572,195; 5,291,399; 5,455,851; 5,465,082; 5,515,426; 5,594,786; 5,689,229; 5,822,418; 5,822,544; 5,699,038 and 5,838,223.

Please replace page 18, second full paragraph [0075], last 2 lines, with the following paragraph:

The badge 12 in step 108 starts transmitting displacement samples at a predetermined interval (e.g., every 5 seconds). In an exemplary embodiment, the badge 12 transmits signals representative of the tag ID and all displacement samples that have been stored in the memory 58 since receiving an acknowledgment of a prior displacement sample transmission. In an exemplary embodiment, the controller 52 obtains displacement samples from the displacement signals of the displacement sensor 50 on a predetermined interval (e.g., 1 millisecond intervals) and stores the obtained displacement samples in the memory 58. In particular, the controller 52 periodically samples the received displacement signals during the given interval to obtain displacement samples that are generally representative of the displacement signals during the interval. After obtaining the displacement samples for the interval, the controller 52 stores the displacement samples in the memory 58. In an alternative embodiment, the badge 12 transmits the displacement samples at various different intervals depending upon the rate of movement of the badge 12 as described in US **Provisional** Patent Application 60/306,818, filed July 20, 2001, **converted to U.S. Patent Application 10/199,849,**

now U.S. Patent No. 6,972,683 and entitled "Locating Badge with Intelligent Transmission Based on Acceleration," the disclosure of which is hereby incorporated by reference.

Please replace page 35, first full paragraph [00132], lines 13-14, with the following paragraph:

Portable device 400 is configured to provide the associated person with instructions to direct the person to the requested asset. In one example, portable device 400 provides at least one of audio and visual instructions. The audio instructions are provided with an optional speaker 408. In another example, portable device 400 provides compass type directions. For example, portable device 400 provides on display 405 a direction-indicating symbol, such as an arrow that points in the direction to travel along a route to reach the location of the asset. An exemplary system for directing a person to a specified location in a facility with a portable device is provided in co-pending application Serial No. 09/798,398, filed on March 2, 2001, **now U.S. Patent No. 6,622,088** and titled "AMBULATORY NAVIGATION SYSTEM," the disclosure of which is expressly incorporated herein by reference.

Please replace page 9, first full paragaph [0047], line 11, with the following paragraph:

The video displays 28 of the ABT system 10 are positioned at various locations throughout the facility (e.g., nurses' stations, hallways, utility rooms). The video displays 28 are operable to provide a graphical representation of the facility including the locations of tagged assets in the facility and the status of various equipment 15 in the facility as illustrated in FIG. 9. Moreover, in an exemplary embodiment, at least a portion of the video displays 28 are also operable to display representations of real-time streaming video. The video displays 28 are implemented using various display technologies such as televisions, computer CRTs, liquid crystal displays (LCDs), light emitting diodes (LEDs), and display panels. In an exemplary embodiment, handheld devices such as a Palm™ Pilots, or Handspring™ Visors which are carried by the caregivers also include video displays 28.

Please replace page 13, second full paragraph [0061], line 30, with the following paragraph:

The direction sensor 62 of the displacement sensor 50 is generally operable to

generate one or more signals that in combination are indicative of the directional orientation or heading of the badge 12 with respect to a reference direction and therefore indicative of the direction traveled by the asset tagged with the badge 12. The direction sensor 62 of the exemplary embodiment includes a two-dimensional magnetoresistive field sensor such as the Philips KMZ52 sensor or two one-dimensional magnetoresistive field sensors such as the Philips KMZ51 which generate one or more signals indicative of the horizontal orientation of the badge 12 with respect to a reference direction such as magnetic north, true north, or some other direction defined by an associated reference field such as the Earth's magnetic field or an artificially generated field such as that generated by reference field generator 30. The exemplary direction sensor 38 further includes support electronics such as a flip coil driver and pre-amps which are used to calibrate the field sensors and interface the field sensors with the controller 32 as explained in Philips Semiconductor publication "Electronic Compass Design using KMZ51 and KMZ52, Application Note AN00022", dated March 30, 2000.

Please replace page 14, first full paragraph [0063], line 21-22, with the following paragraph:

The transmitter 54 of the badges 12 is coupled to the controller 32 to receive one or more signals indicative of information to be transmitted. Similarly, the receiver 56 is coupled to the controller 52 to provide the controller 52 with one or more signals indicative of information received. The transmitter 54 and the receiver ~~32~~ **56** include infrared (IR), radio frequency (RF), and/or other wireless transmission and reception components which utilize one or more different transmission protocols. More specifically, as indicated above, the transmitter 52 includes a passive RF transmitter to transmit identification information such as a tag ID to the ARP sensors 20. Passive RF transmitters i) do not require battery power to transmit information, and ii) generally must pass close to an ARP sensor 20 in order to transmit information which insures a high resolution point for the absolute position.

Please replace page 15, third full paragraph [0067], line 23, with the following paragraph:

In the case of **a** wheeled objects or objects on skids (e.g., hospital beds 16, carts, tables, etc.) the accelerations imparted to the tag or badge 12 attached to the object are fairly periodic in

nature due to each revolution of the wheel(s) or vibrations of the skid(s). In an exemplary embodiment, a ridge or a bump is added to a wheel of a wheeled object in order to aid in the generation of a discernable amount of acceleration. In any event, although the relationship of the vertical acceleration A_y, horizontal acceleration A_x, and time may vary between different types of assets, and even between different pedestrians, the fairly periodic nature of the accelerations imparted to the badges 12 while the object is in motion are readily discernable via the appropriate signal processing algorithms. Moreover, the displacement sensor 50 may generate the signals based on other parameters that vary with the speed of movement of the object. For example, the displacement sensor 50 for wheeled assets may include a more conventional type speedometer that senses the rotation of the wheels and generates signals based upon the sensed rotation of the wheels.

Please replace page 37, fourth full paragraph [00137], line 29, with the following paragraph:

In one embodiment, the virtual reality interface color-codes assets based on their status. For example, bed 16 may be shown in red if an alarm is associated with bed 16 or bed 16 may be shown in yellow indicating that bed 16 needs attention, such as a linen change. Further, assuming the user of virtual reality interface has a badge associated therewith, the user may receive status information about himself/herself. For example, the user might be shown in red if the user is currently contaminated and needs to wash his or her hands. Details on what ~~constituents~~ **constitutes** a contamination and methods and apparatuses for monitoring handwashing are disclosed in copending U.S. Patent Application 09/699,796, filed October 30, 2000 which is expressly incorporated by reference.

Please replace page 39, first full paragraph [00146], line 9, with the following paragraph:

In yet another example, the location of an asset is determined based on location signals sent by a badge to a central receiver. In this example, the badge receives signals from at least one of **the** fixed transmitters, each of the fixed transmitters generating a unique ID signal. The badge then either generates a location signal including the received transmitter ID along with an ID associated with the badge to the central receiver or determines its own location and generates

a location signal including the determined location and the associated badge ID to the central receiver. Either way the location of the badge is determined based at least in part on the received transmitter IDs. In one variation, the location of the badge is determined based on the received transmitter IDs. In another variation, the location of the badge is determined based on the received transmitter IDs and at least one of signal strength or timing information.

Please replace page 39, second full paragraph [00147], line 21, with the following paragraph:

Referring to FIG. 11, one exemplary locating and tracking system 500 of the present invention is shown. System 500 includes a badge or tag 502, which is attached to or ~~other~~ **otherwise** associated with an asset 504, three fixed transceivers 506, 508, 510 mounted at known locations within an area 512 such as a hospital room, and a central computing device 514, such as master station 34, connected to transceivers 506, 508, 510 via a wired or wireless connection referred to by the numeral 516. In one example, locating system 500 including one or more ARP sensors 20 which are located at various locations, such as proximate a doorway 519, and are connected to central computing device 514.

Please replace page 54, third full paragraph [00192], line 26, with the following paragraph:

As shown in Fig. 16 the calculated location 581 of transceiver 580 is displaced from the known location of transceiver 580 by a distance 582. The difference between the calculated location 581 and the true location of transceiver 580 may be caused by interference or multiple reflections or both. However, by knowing the error distance 582 introduced in the location of transceiver ~~480~~ **580**, a better estimate of the location of badge 502 may be made by central computing device 514. That is, the calculated location of badge 502 may be offset by a distance corresponding to distance 582.

Please replace page 55, first full paragraph [00193], line 8, with the following paragraph:

Another exemplary locating system is shown in FIGS. 17-19. Locating system 700 includes one or more transceivers 706, 708, 710. Each transceiver 706, 708, 710 is configured to generate a signal which is detectable by a badge 702 which is associated with an asset 704. In

one example, the signal generated by transceivers 706, 708, 710 is an excitation signal which causes badge 702 to generate an ID signal including a unique ID associated with asset ~~504~~ **704**.

Please replace page 62, first full paragraph [00217], line 14, with the following paragraph:

In another embodiment, cameras 802a and 802b may be replaced with a plurality of scanning lasers mounted on one or more surfaces of room 812, and badge 804 may be replaced with a tag or label including a bar code indicator that identifies the associated asset. In such an embodiment, the lasers are movably mounted to surfaces in room 812 ~~such~~ and electronically controlled to collectively scan the entire room 812 to detect and read the bar code using conventional bar code technology or other suitable techniques. In this manner, the asset associated with the bar code may be identified regardless of its location in room 812, so long as the bar code is within the line-of-sight of the scanning lasers.

Please replace page 62, second full paragraph [00218], line 23, with the following paragraph:

a. In yet another embodiment, a plurality of lasers are arranged in fixed locations around room 812. Each laser is configured to detect interference caused by objects when objects pass through the beam of the ~~laser~~ **lasers**. The lasers may be situated at known angles relative to one another to permit two or three dimensional detection of objects. For example, a first plurality of laser may be located in a substantially horizontal row along one wall of room 812, and a second plurality of lasers may be located in a substantially horizontal row along a second wall of room 812 that is perpendicular to the first wall. When an asset passes through the various beams of the lasers and causes detectable interference, a computing device coupled to the lasers is configured to determine which laser(s) detect the interference. Since the position of each laser is known, the computing device is able to determine a two dimensional location of the asset. It should be understood that the lasers may further be configured to sweep vertically to detect interference caused by assets, regardless of the altitude of the asset. Additionally, a third plurality of lasers may be added, arranged in a substantially vertical column on one wall of room 812 and configured to sweep horizontally, to determine the altitude of the asset according to principles

described above, and provide a three-dimensional location of the asset. Moreover, any of the identification techniques described herein may be used with this variation of the invention to identify the asset in addition to determining its location.